

**Homework 34H**  
**Deductive Reasoning**

Name: \_\_\_\_\_  
Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Show all work or LASALLE.**

**Determine if statement (3) follows from statements (1) and (2) by either the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If it does not, write invalid.**

1. (1) If an angle measures more than  $90^\circ$ , then it is not acute.  
(2)  $m\angle ABC = 120^\circ$   
(3)  $\angle ABC$  is not acute.
  
2. (1) All  $45^\circ$  angles are congruent.  
(2)  $\angle A \cong \angle B$   
(3)  $\angle A$  and  $\angle B$  are  $45^\circ$  angles.
  
3. (1) If you order the apple pie, then it will be served with ice cream.  
(2) Matthew ordered the apple pie.  
(3) Matthew was served ice cream.
  
4. (1) If you wear the school colors, then you have school spirit.  
(2) If you have school spirit, then the team feels great.  
(3) If you wear the school colors, then the team will feel great.
  
5. (1) If you eat too much turkey, then you will get sick.  
(2) Kinsley got sick.  
(3) Kinsley ate too much turkey.
  
6. (1) If  $\angle 2$  is acute, then  $\angle 3$  is obtuse.  
(2) If  $\angle 3$  is obtuse, then  $\angle 4$  is acute.  
(3) If  $\angle 2$  is acute, then  $\angle 4$  is acute.

**In Exercises 7–10, decide whether *inductive* or *deductive* reasoning is used to reach the conclusion. Explain your reasoning.**

7. Angela knows that Walt is taller than Peter. She also knows that Peter is taller than Natalie. Angela reasons that Walt is taller than Natalie.
  
8. Josh knows that Brand X computers cost less than Brand Y computers. All other brands that Josh knows of cost less than Brand X. Josh reasons that Brand Y costs more than all other brands.

Define Theorem

Define Postulate

Use  $p$  and  $q$  to write statement in words.

$P$ : Polygon ABCDE is equiangular and equilateral.

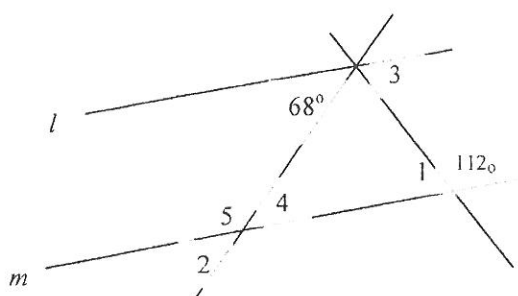
$q$ : Polygon ABCDE is a regular polygon.

1.  $p \rightarrow q$

2.  $\sim q \rightarrow \sim p$

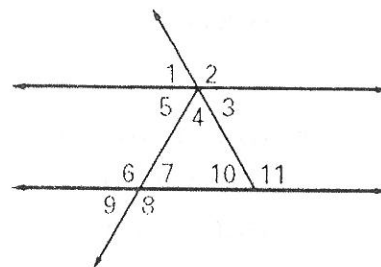
3.  $p \leftrightarrow q$

4. In the figure below, lines  $l$  and  $m$  are parallel. Which of the following angles *does not* have a measure of  $68^\circ$ ?



- A.  $\angle 1$
- B.  $\angle 2$
- C.  $\angle 3$
- D.  $\angle 4$
- E.  $\angle 5$

5. In the figure below, lines  $p$  and  $q$  are parallel. If  $m\angle 10 = 34^\circ$ , what is the measure of  $\angle 2$ ?



- A.  $34^\circ$
- B.  $56^\circ$
- C.  $68^\circ$
- D.  $146^\circ$
- E. None of the above

6. Mr. West earns \$901.00 every two weeks for his job as a mathematics intern. 25% of his pay is withheld for taxes, insurance, social security, etc. How much money does Mr. West actually get to take home every two weeks?

7. 18 is what percent of 87?